CHAPTER – III
METHODOLOGY AND PROCEDURE
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In this chapter, the experimental design, sample, selection of variables, selection of tests and their description, that administration, method of scoring and the statistical analysis employed to analyses the data have been presented.

EXPERIMENTAL DESIGN

This is a survey type of study focused on athletes from selected disciplines of sports. The dependent variables of Motivation, Anxiety, Aggression, and Cohesion in relation to the independent variables of individual and team sport have been studied. The systematic cluster sampling technique was used.

SAMPLE

Subjects for data collection were drawn from the colleges affiliated to the Panjab University, Chandigarh and from Panjab University Campus. The sample consisted of 165 (one hundred sixty five) subjects in the age group of 22 (twenty two) ± 3 (three) years of age group, who were taken from respective coaching camps prior to the All India Inter-university competitions held in the session of 2000-2001. Forty five (45) subjects were drawn from individual sports and one hundred twenty (120) were drawn from team sports.
The subjects were selected from the following Individual and Team Sports:-

<table>
<thead>
<tr>
<th>Sr No.</th>
<th>Individual Sports</th>
<th>Number of athletes</th>
<th>Team Sports</th>
<th>Number of athletes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Swimming</td>
<td>6</td>
<td>Volleyball</td>
<td>17</td>
</tr>
<tr>
<td>2.</td>
<td>Badminton</td>
<td>6</td>
<td>Kho-Kho</td>
<td>17</td>
</tr>
<tr>
<td>3.</td>
<td>Table Tennis</td>
<td>5</td>
<td>Cricket</td>
<td>26</td>
</tr>
<tr>
<td>4.</td>
<td>Gymnastic</td>
<td>6</td>
<td>Softball</td>
<td>19</td>
</tr>
<tr>
<td>5.</td>
<td>Boxing</td>
<td>13</td>
<td>Hockey</td>
<td>17</td>
</tr>
<tr>
<td>6.</td>
<td>Judo</td>
<td>9</td>
<td>Football</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>45</td>
<td>Total</td>
<td>120</td>
</tr>
</tbody>
</table>

Grand Total = 45 + 120 = 165.

**SELECTION OF VARIABLES**

The following variables were selected for the study.

1. **Motivation (Participation)**
   
i) Team spirit
   
ii) Fun and affiliation
   
iii) Power
   
iv) Physical fitness
   
v) Risk taking
   
vi) Excellence
   
vii) Skill
viii) Effort  
vix) Independence  
ix) Envy

2. Motivation (Performance)  
i) Social support  
ii) Ability and Effort  
iii) Expectation of others  
iv) Media and public respect.  
v) Material awards  
vi) Skill  
vii) Knowledge of performance

3. Anxiety (state)  
4. Anxiety (trait)  
5. Aggression  
6. Cohesion:  
i) Individual Attraction to Group-Task (ATG-T)  
ii) Individual Attraction to Group-Social (ATG-S)  
iii) Group Integration-Task (GI-T)  
viv) Group Integration-Social (GI-S)

**SELECTION OF TESTS**

With a view to measure the selected variables the following tests were administered to the subjects.

1. Sports Participation Motivation Scale (Dr. Jagdish Kaur, 1994).


4. Trait Anxiety Scale (TAS) (Dr. Roma Pal and Dr. Govind Tiwari, 1970).

5. Aggression Scale (A Scale) (Dr. Roma Pal and Dr. Tasneem Naqvi, 1971).

6. G.E.Q. (Group Environment Questionnaire) Widmeyer et al. (1985) (For Team-cohesion)

DESCRIPTION OF TESTS

SPORTS PARTICIPATION MOTIVATION SCALE

Sports Participation Motivation Scale prepared by Dr. Jagdish Kaur, (1994) was used to measure motivation for sports participation of the subjects. The scale consists of 24 items in the form of a questionnaire which are to be answered by keeping in view the situation while answering, the subjects are to mark a circle on a five point scale corresponding to his response to indicate the level of an agreement with each of the statements. Subjects are made to read the instructions and instructed to understand the questionnaire well before attempting. The scores of the responses reflected in the five point scale of each question item are calculated. Thus the scores of all the 24 items questions responded by each subject are summed up and analyzed statistically.
RELIABILITY AND VALIDITY

The test-retest reliability of sports participation motivation scale was found .77 and for split half was .71 and validity of the scale was found to be .65.

METHOD OF SCORING

The scale consists of 24 items in the form of questionnaire. Corresponding to the items, a five point scale is provided which is anchored at the two extremes by “strongly agree” and “strongly disagree” to indicate the level of agreement with each statement. The responses in terms of scores reflected in the five point scale of each question are calculated. These are summed up and analyzed statistically.

MOTIVATION SCALE FOR SPORTS PERFORMANCE

Motivational scale for sports performance prepared by Dr. Jagdish Kaur (1994) was used to measure motivation for sports performance of the subjects. The scale consists of 16 items in the form of a questionnaire which are to be answered by keeping in view the situation. While answering the subjects are to mark a circle on a five point scale corresponding to his response to indicate the level of an agreement with each of the statements. Subjects are made to read the instruction and instructed to understand the questionnaire well before attempting. The scores of the responses reflected in the five point scale of each question
item are calculated. Thus the scores of all the 16 questions responded by each subject are summed up and analyzed statistically.

RELIABILITY AND VALIDITY

The test-retest reliability of motivation scale for sports performance was found .77 and for split half was .71 and validity of the scale was found to be .65.

METHOD OF SCORING

The scale consists of 16 items in the form of questionnaire. Corresponding to the items of a five point scale is provided which is an anchored at the two extremes by “strongly agree” and “strongly disagree” to indicate the level of agreement with each statement. The responses in terms of scores reflected in the five point scale of each question item are calculated. These are summed up and analyzed statistically.

STATE-TRAIT ANXIETY INVENTORY

State-trait anxiety inventory constructed and standardized by Dr. Roma Pal and Dr. Govind Tiwari (1970) was used to measure State-Trait Anxiety of the subjects. It is a self-administering list. The State Anxiety Scale and Trait Anxiety Scale consists of 30 items each in the form of a questionnaire which are to be answered by keeping in view the situation. While answering, the subjects are to tick (□) mark to the response
which suits them the most at that very moment. Subjects are made to read and understand the instruction well before attempting. It is as well advised that the State Test be first given to the subjects and then the Trait Test.

**RELIABILITY AND VALIDITY**

The test-retest reliability of State and Trait Anxiety was found to be .68 and .76 respectively, with .73 for the total scale. The Split-half reliability of State Test was found to be .71 and .78 for Trait test and .7 for the total test.

For concurrent validity of the present test, the English version of State Anxiety and Trait Inventory Cattell and Sciories (1963) IPAT Anxiety Scale and Taylor (1953) Manifest Anxiety Scale were administered to a sample of 200 college students (100 males and 100 females). The correlation coefficients are given in the following table:

**CORRELATIONS BETWEEN THE STATE TRAIT ANXIETY (ST)**

**IPAT AND TMAS**

<table>
<thead>
<tr>
<th>Anxiety Scales</th>
<th>College males N=100 STA</th>
<th>College females N=100 STA</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAT</td>
<td>.75</td>
<td>.73</td>
</tr>
<tr>
<td>TMAS</td>
<td>.81</td>
<td>.83</td>
</tr>
</tbody>
</table>
The above table clearly shows that the present list is a valid tool for the measurement of State-Trait Anxiety.

**METHOD OF SCORING**

The possible range of the scores for the state anxiety and trait anxiety varies from 30 (minimum) to 90 (maximum). The subjects respond to each item of both the scales by rating themselves according to the standard instructions on a three point scale (1) Always, (2) Sometimes and (3) Never for balancing state and trait scale equal numbers of items have been taken. High rating indicates high anxiety whereas low rating indicates low anxiety for the positive items of each scale for the positive items of each scale.

The weight-age scores of responses will be marked 3, 2 and 1 respectively whereas reversed items will be marked 1, 2 and 3.

The positive and negative items of the state and trait anxiety are given below.

1. **STATE ANXIETY**

   **Positive items**: 1, 2, 4, 5, 6, 7, 10, 11, 15, 16, 19, 20, 22, 24, 25, 26, 27, 28, 29, 30
   (Scoring should be 3, 2, 1).

   **Negative items**: -3, 8, 9, 12, 13, 14, 17, 18, 21, 23
   (Scoring should be 1, 2, 3).
2. TRAIT ANXIETY

Positive items: 1, 2, 3, 6, 7, 8, 10, 11, 13, 14, 15, 23, 26, 27, 28, 29, 30
(Scoring should be 3, 2, 1).
Negative items: -4, 5, 9, 12, 17, 18, 19, 20, 21, 22, 24, 25
(Scoring should be 1, 2, 3).

AGGRESSION SCALE

Aggression Scale by Dr. Roma Pal and Dr. Tasneem Naqvi (1971) was used to measure the level of aggression of the subjects. The scale consisted of 30 items in the form of a questionnaire which are to be answered by keeping in view the situation. All the items of this Aggression Scale are matter of behaviour in daily life. The subjects were made to read the instructions and understand the questionnaire well before attempting. While answering the subjects are to put a 'Tick Mark' (□) on a five point scale corresponding to his response to indicate the level of an agreement with each of the statements.

RELIABILITY AND VALIDITY

The test-retest reliability was found to be .78 and split-half reliability of Aggression Scale was found to be .82. The validity of the Scale was found to be .74.
METHOD OF SCORING

The scale consisted of 30 items in the form of questionnaire. Each of the item has fine alternate answers (multiple choice) graded on five point scale on the positive dimension and zero point on negative dimension. Operationally defined, all the items of this Aggression Scale are matter of behaviour in daily life. The obtained scores of this scale vary in between 0 to 150. Categories of scores can be:

<table>
<thead>
<tr>
<th>Category</th>
<th>Range of Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Saturated</td>
<td>107 and above</td>
</tr>
<tr>
<td>2. The High</td>
<td>90-106</td>
</tr>
<tr>
<td>3. The Average</td>
<td>61-89</td>
</tr>
<tr>
<td>4. The Low</td>
<td>46-60</td>
</tr>
<tr>
<td>5. The Clean</td>
<td>45 and below</td>
</tr>
</tbody>
</table>

COHESION

The G.E.Q. consisted of four sub scales which included
i) Individual Attraction to Group-Task (ATG-T)
ii) Individual Attraction to Group-Social (ATG-S)
iii) Group Integration-Task (GI-T)
iv) Group Integration-Social (GI-S)

The construct, Individual Attraction to Group-Task reflects individual team member’s feeling about his/her personal involvement with the group-task productivity, the goals and the objectives; the construct, Individual Attractions to Group-Social,
represents the individual team member's feeling about his/her personal involvement, acceptance and social interaction with the group; the construct Group Integration-Task is based on the individual team member's feeling about the similarity, closeness and bonding within the team as a whole, around the groups task; and the construct Group Integration-Social is based on individual team member's feelings about the similarity, closeness and bonding within the team as a whole around the group as a social unit.

In so far as the social vs task distinction is concerned, the former is reflected in a general orientation or motivation towards developing and maintaining social relationship with in the group. The latter is reflected in a general orientation or motivation towards achieving the organization's goals and objectives.

The values for Cronbach's Alpha with regard to 'Individual Attraction to Group-Task; Individual Attraction to 'Group Integration-Social' were .74, .58, .78, and .61 respectively. The inter-scale correlation indicated that the scales were moderately related.

The internal consistency comparison with regard to study 1 and 2 were as under:

<table>
<thead>
<tr>
<th>Scales</th>
<th>Study-I</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Individual Attraction to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group-Task (ATG-T)</td>
<td>.74</td>
<td>.65</td>
</tr>
</tbody>
</table>
2. Individual Attraction to Group-Social (ATG-S) \( .58 \) \( .64 \)
3. Group Integration-Task (GI-T) \( .78 \) \( .71 \)
4. Group Integration-Social (GI-S) \( .61 \) \( .72 \)

To establish the construct validity of G.E.Q., it had to undergo different versions. The overall objective was to achieve internal consistency. The final results were version 3 of the G.E.Q. and 18 items questionnaire. For ATG-T, ATG-S, GI-T and GI-S, the Cronbach’s Alpha were \( r = .75 \), similar to those of the 24 items G.E.Q. and thus version 3 of the G.E.Q. continued to have good internal consistency after elimination of problem items observed in the previous 24 item version.

The Group Environment Questionnaire comprises 18 items. Four items relate to the ‘Individual Attractions to Group-Task’ scale, five items to the ‘Individual Attractions to Group-Social’ scale, five items to ‘Group Integration Task’ scale and four items to ‘Group Integration-Social’ scale. Some of these items contain positive statements about the team whereas others are negative statements. Each team member is required to respond to these 18 items on a ‘9’ point continuum, two extremes being ‘strongly agree’ and ‘strongly disagree’. The score for an individual on any particular scale are computed by summing the relevant item values to obtain the total scale score.

The Group Environment Questionnaire is equipped with a key which was used while computing the scores.
METHOD OF SCORING

The Group Environment Questionnaire (GEQ) was provided with a key which was used for scoring. This 'a point scale' had two extremes, 'strongly agree' and 'strongly disagree'. In the sub-scale 'Individual Attraction to Group-Task', items 2, 4, 6 and 8 were scored from 'strongly disagree' = 9 to 'strongly agree' = 1. In the sub-scale 'Individual Attraction Group-Social', items 5 and 9 were scored from 'strongly disagree' = 1 to 'strongly agree' = 9 and items 1, 3, 7 were scored from 'strongly disagree' = 9 to 'strongly agree' = 9 and items 14 and 18 were scored from 'strongly disagree' = 9 to 'strongly agree' = 1. The item 15 of the construct 'Group Integration-Social' was scored from 'strongly disagree' = 1 to 'strongly agree' = 9 and items 11, 13, and 17 were scored from 'strongly disagree' = 9 to 'strongly agree' = 1.

Thus the scale contains positive and negative statements about the team and the individual's involvement with the team.

ADMINISTRATION OF TESTS

Since the data collection cooperation was required from many quarters. The coaches were approached. They assured the maximum help in this regard. Appointments were taken during coaching camps at university level. The timings for administration of the test were decided in consultation with the coaches concerned so that their schedule was not disturbed. The subjects were to be divided in batches of 10 each and administered the test at a place where minimum distraction could be caused. All
the tests were administered one after the other and before the conduct of each test the test instructions were read out to the students and they were told to follow the instructions. In all the tests the subjects were told to list their first response spontaneously and without any delay. However, the subjects were allowed to complete the task as soon as he or she could. Each subject was told to handover the response sheet immediately after it was completed.

SEQUENCE OF ADMINISTERING THE TESTS

Uniformity was maintained throughout data collection phase with reference to sequence of administering the tests the following sequence was followed,

1. Sports Participation Motivation Scale (Dr. Jagdish Kaur, 1994).
4. Trait Anxiety Scale (TAS) (Dr. Roma Pal and Dr. Govind Tiwari, 1970).
5. Aggression Scale (A Scale) (Dr. Roma Pal and Dr. Tasneem Naqvi, 1971).

The uniformity of testing conditions and sequence of testing was ensured. However, environmental distractions were guarded
against. Five minutes of break was given between each questionnaire.

**STATISTICAL DESIGN**

In this study, psychological variables related to sports participation motivation, sports performance motivation, state-trait anxiety aggression and cohesion were studied at individual and team sports. To find out the significance of the differences among various individual and team groups, the analysis of variance was applied (ANOVA).

The means, SD and T-ratio will be computed to know the level and direction of significance of differences among athletes of individual and team sports on each variable.